

memorandum

DATE: September 30, 1983

REPLY TO
ATTN OF: Administrative Forester, White River NWR, DeWitt, AR

SUBJECT: Wildlife Inventory Plans

TO: Don Orr, Migratory Bird Field Coordinator, Memphis, TN

White River Refuge does not have a formal wildlife inventory plan. The need for this plan was identified in a recent programmatic inspection by RO. I anticipate this plan along with several others being completed this winter.

Below is a brief description of inventory techniques currently being used by this station.

1. Eagle Mid-Winter Survey - Staff members are assigned specific parts of the Refuge to canvas (specifically the wetlands in that unit) on a particular date. All birds seen are recorded by species (if possible), location, date, and time of day observed. All censusing efforts occur in a specific time period, say 8-12 noon. Remote, inaccessible areas are aerially censused during the same time period.
2. Waterfowl - Overwintering populations are estimated by aerial surveys. These surveys are conducted by flying the Refuge starting at the southwestern corner and systematically examining all areas that historically receive heavy waterfowl use. Surveys terminate at the northern Refuge boundary. All population estimates are made by the same individual in an effort to eliminate bias between individuals.
3. Geese - Surveys are conducted weekly during the winter months by actually counting the number of birds present. Geese at this station are limited to two locations, both relatively small, which enable accurate counts being made. Counts are conducted on the same day at both locations to eliminate double counting.
4. Alligator Survey - This count is conducted according to instructions on weather and water conditions provided by Dr. Chabreck, LSU, as part of the Cooperative Alligator Survey. The same stream systems are surveyed each year. Extended late spring-early summer flooding here generally necessitates waiting until mid-summer before conducting the survey.
5. Dove Call Count - Employees at this station annually conduct a call count route, one of the many routes conducted nationwide and coordinated by the Office of Migratory Bird Management.

6. Turkey - Observations of poults by employees are recorded by number of poults, date, exact location, and approximate size. After duplicate observations are eliminated, this information yields "rough" trend data as to hatch success during a particular year.
7. Deer - Kill information collected at Refuge check stations is used exclusively to reconstruct deer populations. All deer hunts here are either sex and have been for the last 23 years. This fact coupled with extensive research a few years ago on reproductive rates of the Refuge deer herd enables us to effectively develop total herd numbers by age class and sex ratios.

A handwritten signature in cursive script that reads "Jim C. Johnson".

Jim C. Johnson

WILDLIFE INVENTORY PLAN

White River National Wildlife Refuge
P. O. Box 308
DeWitt, Arkansas 72042

WILDLIFE INVENTORY PLAN

PART I

Summary Of Refuge Prospectus

White River National Wildlife Refuge is unique in that it is the only true bottomland hardwood refuge in Region 4. It is important in the Mississippi Flyway since it serves as both a resting and wintering area for migrating waterfowl. The refuge supports from 20 to 40 percent of Arkansas' wintering waterfowl populations.

The major refuge objective is to develop and manage the land and water resources to provide optimum habitat for migrating birds, with emphasis on migrating and wintering waterfowl. High on the priority list is to preserve the bottomland hardwood timber resource that is unique to the Mississippi Valley.

Since providing habitat for 17,000,000 duck days use is the refuge's most important objective, it is necessary to have a higher degree of reliability in census procedures than for secondary species.

The intensive timber management program, with emphasis on wildlife management, is providing optimum habitat for turkeys and squirrels. Though these are significant species, a lesser degree of reliability in inventory procedures is permissible. Population trends are satisfactory for managing these species.

White-tailed deer is a very important big game species and a higher reliability in inventory procedure is necessary. The inventory procedure for this plan will serve as an interim procedure until a procedure

can be developed from a five-year, hunter-kill data that will be available upon completion of the 1969 public deer hunt.

WILDLIFE INVENTORY PLAN

PART II

Policy On Wildlife Inventory Procedures

Transects for the waterfowl survey and census areas for the turkey survey have been organized to cover all the habitat areas so that populations can be compared from one census period to another and from year to year.

Flooding conditions during the squirrel inventory period prevent establishing permanent plots to be used each year; but, random selected plots in timber types that are considered squirrel habitat will give population trends that can be compared annually.

The procedures outlined in this plan should be followed closely so year to year comparisons are valid.

Some entire procedures or parts, perhaps, will need to be amended as species habitat changes. When a part of the plan is superseded by amendment, the obsolete part should be appended to the plan to show future workers how previous data has been collected and interpreted. All procedures in this plan are conducted with refuge personnel, with the exception of the pilot and students working the checking stations during public hunts.

The area biologist will be called on from time to time to help evaluate proposed changes and projects for the refuge. He will also insure continuity of methods and procedures in the transition period of personnel changes.

WILDLIFE INVENTORY PLAN

PART III

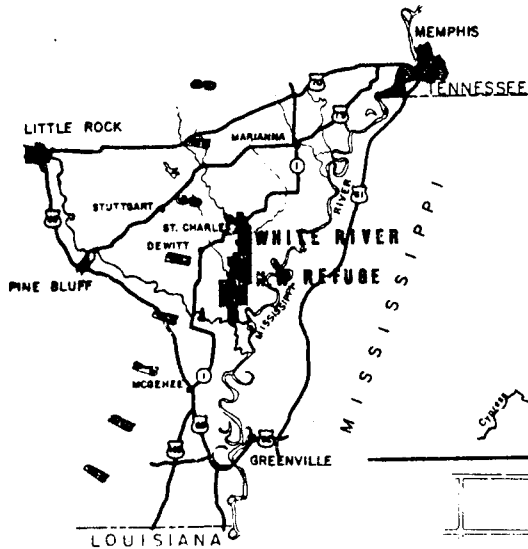
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UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
GENERAL MAP
WHITE RIVER
NATIONAL WILDLIFE REFUGE
ARKANSAS, DESHA, MONROE & PHILLIPS COUNTIES
ARKANSAS

SCALE
0 1 2 3 4 5 MILES
JULY 1961



- LEGEND**
- REFUGE BOUNDARY
 - ACCESS - PAVED ROAD
 - UNPAVED ROAD
 - TRAIL
 - IMPROVED CAMP SITE
 - CAMPING PERMITTED
 - CONCESSION AREA
 - LEVEE
 - FLOWAGE EASEMENT ONLY
 - NATURAL AREA

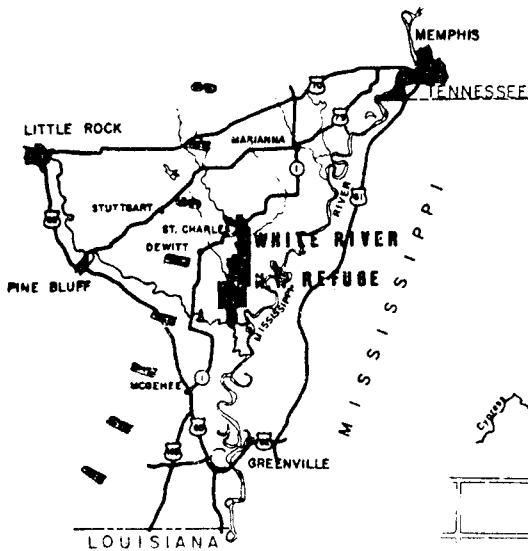
ARKANSAS COUNTY

March-April
Census Units

Waterfowl Inventory

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
GENERAL MAP
WHITE RIVER
NATIONAL WILDLIFE REFUGE
ARKANSAS, DESHA, MONROE & PHILLIPS COUNTIES
ARKANSAS

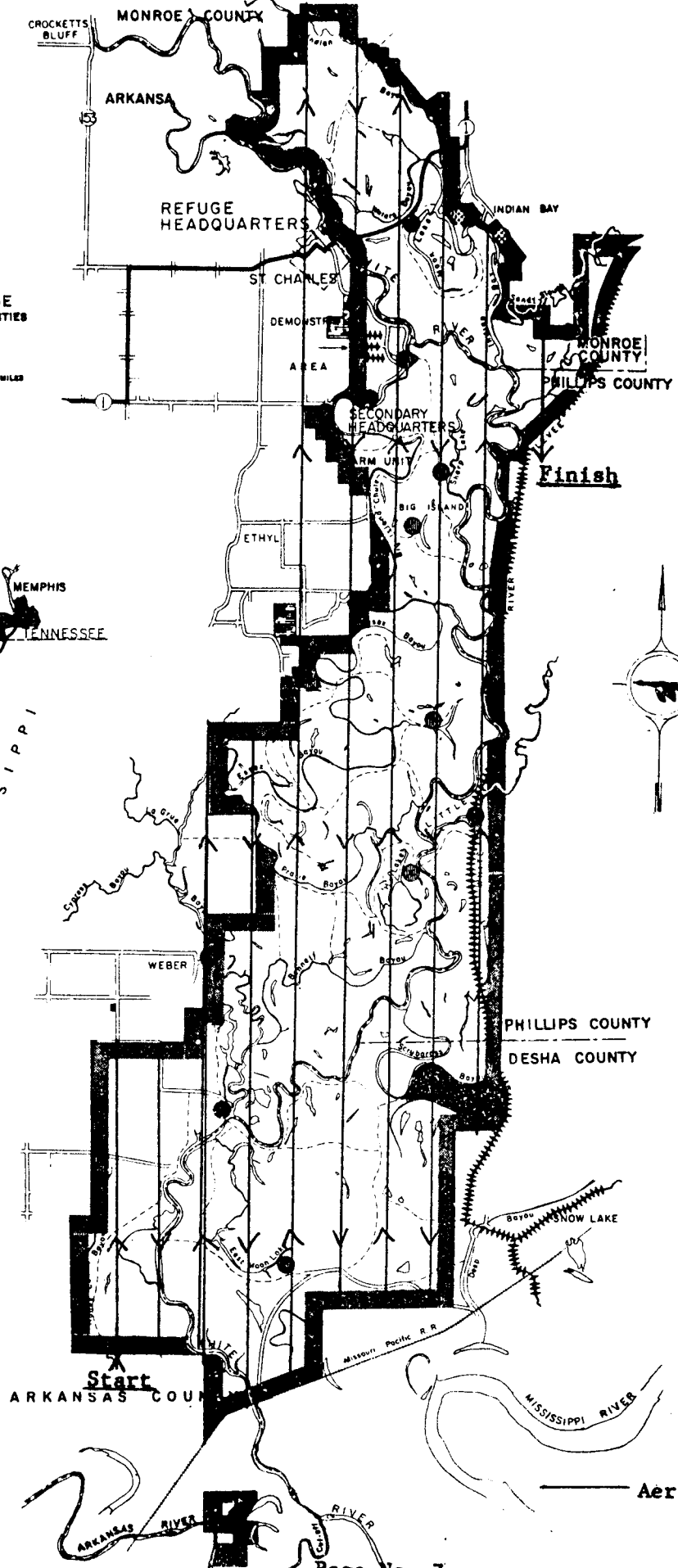
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JULY 1961



LOCATION MAP

LEGEND

- REFUGE BOUNDARY
- ACCESS - PAVED ROAD
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- NATURAL AREA



Aerial Transect

WILDLIFE INVENTORY PLAN

PART V

Physical Facility Needs

All major refuge roads and motor vehicles must be maintained in an operational condition to accomplish the Wildlife Inventory Procedures.

Refuge pickups, station wagons, jeeps, and an outboard motorboat, will be used when conducting procedures. Since all employees will be involved during the entire year in making observations for some procedures, road conditions will vary from dry to inundated.

The use of binoculars, provided each employee, will aid in field observations and identifications. A tape recorder is also necessary in conducting certain procedures where continued movement and observations are required. The production survey for wood ducks requires a light-weight step ladder to make nest observations in artificial nesting structures. A rented aircraft and pilot are essential for the water-fowl inventory procedure.

WILDLIFE INVENTORY PLAN

PART VI

Manpower And Operating Cost

From three qualified personnel to all refuge employees will be used to conduct the Wildlife Inventory Procedures. All refuge employees keep a record of all wildlife observations during their normal refuge activities. This information is used to some extent in completing some inventory proceedings. It is the Assistant Manager's responsibility to collect and compile these observations in accordance with approved inventory plans.

The following table shows a breakdown of manpower, in man years, and operating costs for each inventory procedure, and gives totals for all procedures in the plan.

<u>Procedure</u>	<u>Man Years</u>	<u>Total Costs</u>
I	.031	\$ 243.00
II	.055	645.00
III	.105	851.00
IV	.019	171.00
V	.013	118.00
VI	<u>.057</u>	<u>797.00</u>
Refuge Total	.280	\$2,825.00

WILDLIFE INVENTORY PLAN

PART VII

General Contents

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WINDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge : White River N. W. R.

Procedure No.: 1

Species: Black Bear
(Euarctos americanus)

Reliability Class: D

Title : Black Bear Inventory

Purpose

The Black Bear is a threatened species within the lower White River drainage system. The shrinking habitat surrounding the refuge has pushed the remaining bear onto the refuge. These bear are descendants of the original bear of this area and add significantly to the balance of wildlife and fish. They are also an important factor in making the public's visits to the refuge worthwhile. This inventory will prevent the refuge bear population from declining to a no return level without management effort being initiated.

Procedure

The already established procedure of recording all bear seen in the field diary and a monthly review of these diaries with pertinent information being extracted and recorded on Form WRR-1 (Exhibit 1), will be continued.

The second part of this procedure will be used in all public hunts when questionnaires are supplied to the hunter. There is a place on the questionnaire for the hunter to answer where bear were observed, size, and date. These sightings will also be recorded on Form WRR-1.

The years observations will be plotted on a refuge map using the observers listed location. A total refuge population will be estimated using size, location, and date recorded on Form WRR-1.

1. Number of Personnel Required: The number will vary due to season of the year. Since this inventory is to be conducted in conjunction with other refuge operations, only the time involved with recording and population estimating will be considered. One person will analyze all the data.
2. Qualification of Participating Personnel: The population estimator must have knowledge of the life history of the black bear. Observers will be anyone authorized to be on the refuge and can identify a black bear.
3. Time of Day: Observations can be made anytime, day or night.
4. Dates of Inventory: This will be a continuous census procedure with total population estimates being made for the calendar year.
5. Survey Units: The entire refuge will be a survey unit.
6. Census Route: No specific route will be designated as observations will be recorded throughout the refuge.
7. Equipment and Supplies: Each employee will have his field diary with him at all times to record any observation. The deer hunt permits (Exhibit #2) have a portion set aside for the hunter to record his bear observation. The squirrel and raccoon hunt forms (Exhibit #3 & 4) have a section for the recording of hunter sighted bears.

8. **Field Data Forms:** The Field Diary (Form 3-689) and the appropriate form for what ever hunt is being conducted. (Exhibits #2, 3, & 4)

9. **Summary Data:** All data will be recorded on Form Wrr-1 for incorporation onto NR-3 for the annual Narrative Report.

10. **Data Filing:** Form WRR-1 will be filed in "Wildlife" under appropriate species.

Reliability

The reliability of this procedure is probably in the Class C category, however, due to a lack of definite proven procedure, it will have to be in the Reliability Class D.

Manpower and Costs

A. Manpower:

	Man-Hours	Annual Costs
1. Estimator (GS-9)	40 (\$4.07/hr.)	\$163.60
2. Incidental Observations (staff)	24 (\$3.31/hr.)	79.59

B. Equipment:

1. No special equipment use will be required, therefore no additional costs are involved.

C. Materials:

The only special material involved will be Form WRR-1 and the cost is insignificant.

Total Cost \$243.19

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

Exhibit #2

Please complete the following and return to the check station or
mail to White River Refuge, P. O. Box 308, DeWitt, Arkansas 72042.

1. Did you participate in the hunt? Yes_____ No_____
 2. How many hours did you hunt Nov. 19_____ Nov. 20_____.
 3. Did you kill a deer? Yes_____ No_____ Buck_____ Doe_____
 4. How many bear seen & location. _____
-

WILDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge : White River N. W. R.

Procedure No.: 2

Species: Turkey
(Meleagris gallopauo selvestris)

Reliability Class: D

Title : Turkey Inventory

Purpose

The turkey is a major wildlife species on the refuge and probably will be the only major concentration on the lower White River Basin. The refuge turkey population presently is under duress due to the annual flooding during the nesting season. Continued population estimates will be a measuring stick for the present and future refuge management programs. The wild turkey is a true trophy for the hunter and has a high interest value to birdwatchers and the general public.

Procedure

The already established procedure of recording all turkey seen in the field diary and a monthly review of these diaries with pertinent information being extracted and recorded on Form WRR-5 (Exhibit 1) will be continued.

The second part of this procedure will be used in all public hunts when questionnaires are supplied to the hunter. There is a place on each of the questionnaires for the hunter to answer where turkey were observed, number and date. These sightings will be recorded on Form WRR-5.

During the spring flood season, generally March and April, all high land adjacent to the refuge boundary will be censused by refuge personnel. The census area will consist of six units (Map 1) and each unit will be censused by the same individual for one week during the above mentioned period. Observations will be recorded on WRR-5.

The incidental observations, along with hunter reports, with major emphasis on the March-April week long census, will determine the refuge turkey population.

1. Number of Personnel Required: All refuge personnel will be involved in the continuing inventory and four employees will be needed to conduct the March-April count.
2. Qualification of Personnel: Knowledge of the life history of the birds being censused is prerequisite. Observers must be Bureau employees or observers approved by the Bureau.
3. Time of Day: The March-April count should be conducted during the first three hours of daylight and/or the last two hours of daylight.
4. Dates of Inventory: The week for the March-April count will be decided by the refuge manager due to the varied conditions from year to year.
5. Survey Units: The refuge boundary will be divided into six sections and all open fields adjacent to refuge boundary will be checked during the March-April census.

6. Equipment and Supplies: Each employee will have his field diary with him at all times and the observers for the March-April census will have Form WRR-5 for recording all turkey observations.

7. Field Data Forms: The field diary and Form WRR-5 will be needed in this inventory.

8. Summary Data: All data will be recorded on Form WRR-5 for incorporation into the annual Narrative Report.

9. Data Filing: All WRR-5 forms will be filed in "Wildlife" under the appropriate species.

Reliability

The procedure will produce Reliability Class D information.

Manpower and Costs

A. Manpower:

	<u>Man-Hours</u>	<u>Annual Costs</u>
1. Incidental Observation (staff)	24 (\$3.31/hr.)	\$163.60
2. March-April Count (GS-6 - GS-12)	90 (\$4.29/hr.)	386.10

B. Equipment:

1. Cost to Operate Vehicles 1600 miles	(.06/mile)	96.00
		Total Costs \$645.70

C. Materials:

The only special material involved will be Form WRR-5 and the cost is insignificant.

Prepared by: _____ Date: _____

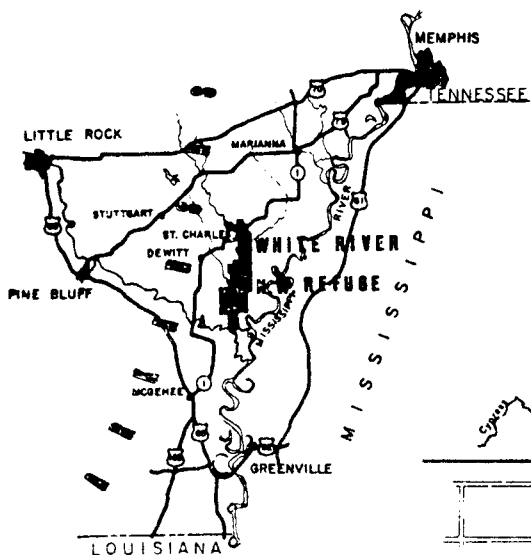
Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

March-April
Census Units

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
GENERAL MAP
**WHITE RIVER
NATIONAL WILDLIFE REFUGE**
ARKANSAS, DESHA, MONROE & PHILLIPS COUNTIES
ARKANSAS

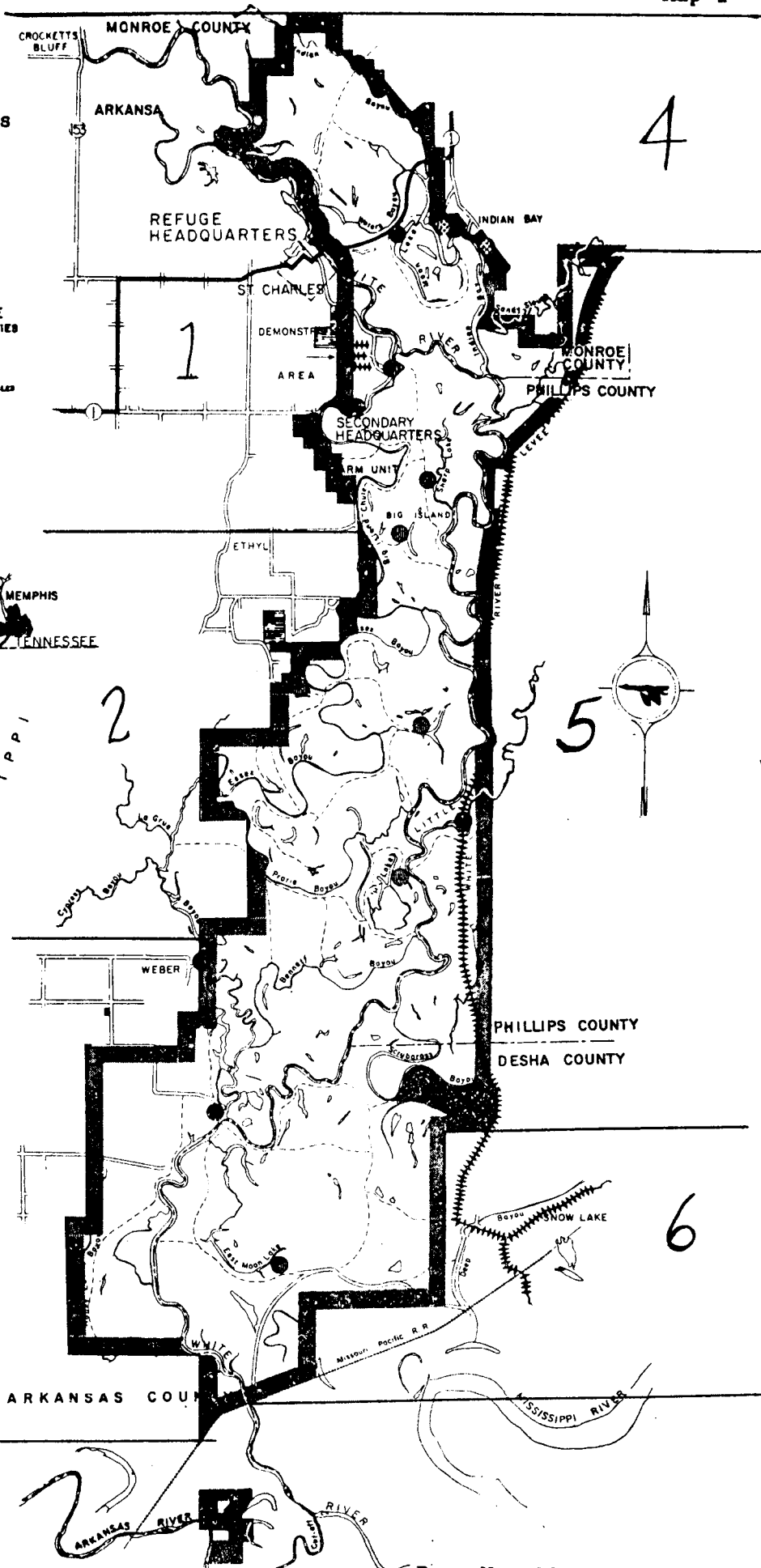
SCALE
0 1 2 3 4 5 MILES
JULY 1961



LOCATION MAP

LEGEND

- REFUGE BOUNDARY
- ACCESS - PAVED ROAD
- UNPAVED ROAD
- TRAIL
- IMPROVED CAMP SITE
- CAMPING PERMITTED
- CONCESSION AREA
- LEVEE
- FLOWAGE EASEMENT ONLY
- NATURAL AREA



WILDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge: White River N. W. R.

Procedure No.: 3

Species: Ducks and Geese
(Anatinae Aythyinae Anserinae Merginae)

Reliability Class: C

Title: Waterfowl Inventory

Purpose

White River Refuge was established to provide wintering habitat for migratory waterfowl. Only continuous systematic inventories of visiting waterfowl will determine if the refuge is fulfilling its' intended mission. Waterfowl use figures will also indicate if the current and future refuge management programs are adequate to meet the needs. A large percent of the Mississippi Flyway mallard population winters on and adjacent to the refuge and accurate inventories will assist in determining the spring breeding populations.

Procedure

Since ducks and geese are quite similar in many respects, a single inventory will be conducted to inventory both species.

A. Aerial Transects: Monthly aerial transects over the refuge proper will be the primary censusing technique used to inventory waterfowl.

1. Number of Personnel: Pilot and one observer.

2. **Qualifications of Personnel:** Knowledge of the life history of these species is prerequisite. Observer must be a Bureau employee or observer approved by the Bureau.
3. **Dates of Inventory:** The aerial transects will be checked once a month during the waterfowl migration season.
4. **Time of Day:** Aerial transects will be flown in the morning hours between 9:00 A.M. and 12:00 noon.
5. **Weather Conditions:** A minimum of 70% visibility will be required in order to make reliable observations.
6. **Survey Units:** The entire refuge will be considered as one unit.
7. **Census Route:** Aerial transects will be flown beginning at Lock No. 1 and proceeding north to refuge boundary then east one mile and then south to refuge boundary. The procedure is continued until the entire refuge has been checked. (Map 1)
8. **Method of Transportation:** Fixed wing aircraft will be used. Speed should be 80 m.p.h. or less if possible (ground speed) and elevation not higher than 500 feet.
9. **Equipment and Supplies:** The only thing needed will be a portable tape recorder for recording numbers seen.
10. **Summary Data Forms:** Field data will be summarized on Form 3-1867 Rev. R.O. for incorporation onto the NR-1 for the annual Narrative Report.

11. Data Filing: Form 3-1867 will be filed in "Wildlife" under Waterfowl Inventory.

Reliability

This procedure would produce Class C information.

B. Incidental Observation: The observation will be processed as any other wildlife observation. The observer will record in his field diary and the information will be extracted weekly during the waterfowl migration period.

C. Production Survey-Wood Ducks: The refuge contains over 160 lakes, varying in size from only a few acres to several hundred acres. Water depths in these lakes vary, depending on the season and the elevation of the Mississippi River. The shallow ends of these lakes which are generally grown up in dense stands of button bushes and various types of aquatic vegetation are potential wood duck rearing habitat areas.

Since wood duck production areas and rearing habitat may vary considerably, and since newly-hatched wood ducks are known to travel several miles from their nests to rearing habitat, it will be necessary to conduct surveys on lakes considerable distances from the incubation site.

Procedure

The observers will be at pre-determined points at daylight and will remain at these points for one hour. Both the numbers of flightless broods observed and the numbers in each brood will be recorded in the field diary. Only one observation per observer will be made in a day.

The observer will estimate the acreage of wood duck rearing habitat in which he can see a brood of wood ducks.

Upon completion of each of these three 2-day inventories, the number of broods, flightless wood ducks and acreages on which the surveys are conducted will be calculated to determine the number of wood ducks raised on the refuge.

1. Number of Personnel Required: Three refuge personnel will conduct this survey in two mornings.
2. Dates of Inventory: This inventory will take place during the latter part of April and will be repeated each six weeks through July.
3. Times of Day: The inventory will begin at daylight and will continue for one hour.
4. Weather Conditions: The inventory will be conducted only on clear days with no appreciable wind and during periods when flooding conditions do not exist.
5. Survey Units: Survey units for this inventory will be small lakes up to five acres in size, shallow sloughs with dense stands of brush and aquatic vegetation, and the shallow ends of larger lakes.

Incidental observations on Big Island Chute, Prairie Bayou, Essex Bayou and other streams running through the refuge will be made by refuge employees while conducting routine refuge work.

6. Observation Points: Six observation points - two each from small lakes, shallow sloughs and larger lakes - will be pre-selected for these surveys. These pre-determined points will serve as permanent observation points.
7. Method of Transportation: Pick-up trucks or jeeps will be used to transport the observer to within one-fourth mile of the observation point.
8. Field Data Forms: The field diary will be used to record field notes.
9. Summary Data Forms: All field data will be transferred to Form NR-1 for incorporation into the Narrative Report.

Reliability

Reliability of the population data will be Class D information.

Manpower and Costs

<u>A. Manpower:</u>	<u>Man-Hours</u>	<u>Annual Costs</u>
1. <u>Observers</u>	36	\$144.00
2. <u>Summarization of Data</u>	5	25.00
 <u>B. Equipment:</u>		
1. <u>Vehicle</u>		32.00

C. Materials:

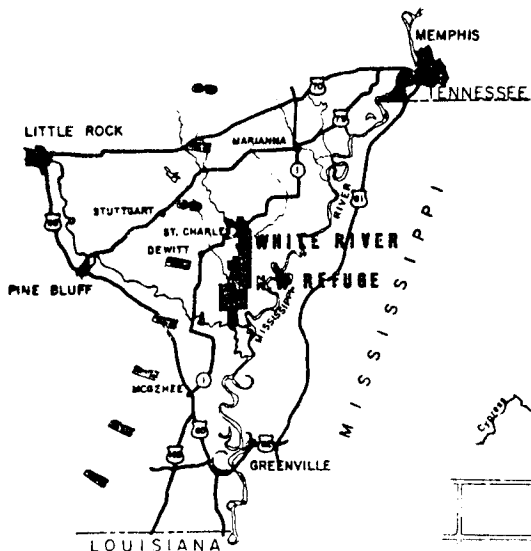
No special material will be involved in this procedure.

Total Costs \$201.00

Prepared by: _____ Date: _____
Reviewed by: _____ Date: _____
Approved by: _____ Date: _____

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
GENERAL MAP
WHITE RIVER
NATIONAL WILDLIFE REFUGE
ARKANSAS, DESHA, MONROE & PHILLIPS COUNTIES
ARKANSAS

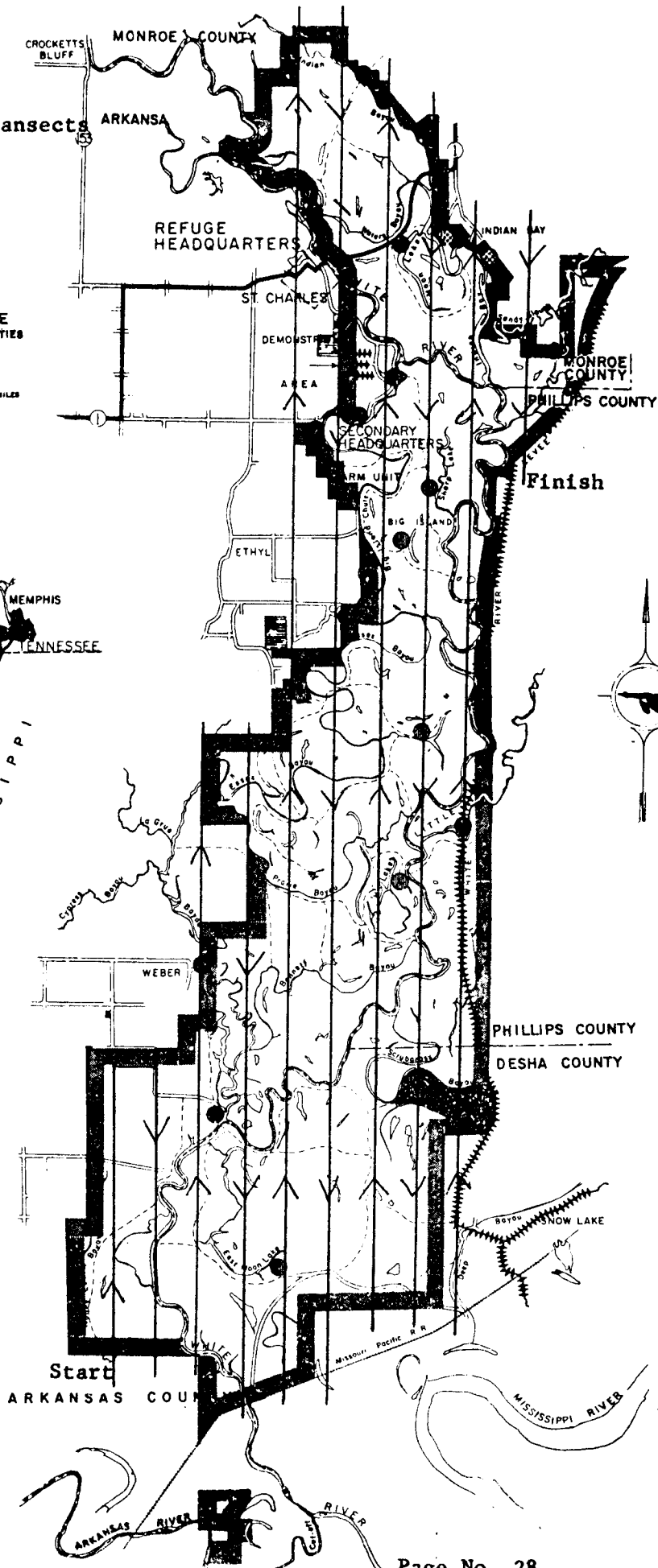
SCALE
0 1 2 3 4 5 MILES
JULY 1961



LOCATION MAP

LEGEND

- REFUGE BOUNDARY
- ACCESS - PAVED ROAD
- UNPAVED ROAD
- TRAIL
- IMPROVED CAMP SITE
- CAMPING PERMITTED
- CONCESSION AREA
- LEVEE
- FLOWAGE EASEMENT ONLY
- NATURAL AREA



WILDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge : White River N. W. R.

Procedure No.: 4

Species: White Tailed Deer
(*Odocoileus virginianus*)

Reliability Class: D

Title : Deer Inventory

Purpose

The white tailed deer is an important game animal in this area. Shrinking habitat around the refuge has placed the responsibility of management of a once large deer herd on refuge personnel. This inventory will be used until a more sophisticated method can be developed. The controlling factor is limited habitat during periods of high water to prevent crop depredation on adjacent private lands. Refuge habitat can not be fully utilized due to this limiting factor. Trends obtained from this procedure will be used to determine the amount of surplus deer each year. The surplus will be removed by public hunting.

Procedure

The assumed population, based on results of eight years of hunting, was 7000 deer in the spring of 1969. Based on past hunting data, the estimated yearly production is 2000 deer. Hunting will remove 1500 per year and natural causes, illegal kill, and farmer kill will remove the other 500. This will leave the same number for the next year.

Two areas on the refuge are censused annually to determine the trend of the population. Dry Lake Farming Unit is censused on two evenings in

December, the last hour of daylight. The deer are counted and the figures recorded. The counts are one week apart. The Big Island Chute Farm Unit is treated in the same manner during the high water period. This usually occurs in late March or early April. Again two counts are made and the largest number counted on a single day is the figure recorded.

Annual production estimates can vary depending on the following factors.

1. Length and depth of high water period.
2. Number of deer killed during regular state hunting season outside the refuge.
3. Amount of free running dogs.
4. Increase or decrease in coyote and bobcat population.
5. Increase or decrease in illegal kill.
6. Depth and severity of ice and snow during winter.
7. Condition of the habitat.
8. Disease or die-off noted.

Two observers will count the animals on the two inventory areas. The Assistant Manager will record the information on NR-3.

During the Refuge deer hunt, all deer are checked out at one of several check stations. Data collected includes weight, age, sex, and a sample is made of female organs to gather reproductive data. This information becomes permanent data for later use in preparing a pyramid of the deer population.

1. Number of Personnel Required: Two men will census the deer on the Dry Lake Farm Unit on two different days one week apart during December.

Two men will census the deer on the Big Island Chute Farm Unit on two different days in late March or April, depending upon high water.

2. Qualification of Personnel: No particular qualification except be able to identify deer.

3. Time of Day will be last hour of daylight.

4. Dates of Inventory: Anytime in December but prior to high water for Dry Lake. Anytime in March or April on the Farm Unit, provided the White River is above 25.0 feet on the gauge at St. Charles.

5. Equipment and Supplies: Binoculars, notebook or tape recorder and Jeep.

Reliability

This procedure will produce Class D information.

Manpower and Costs

A. Manpower:

	<u>Man-Hours</u>	<u>Annual Costs</u>
1. Estimators	32 (\$4.00/hr)	\$128.00
2. Compiler	8	32.00

B. Equipment:

1. Mileage estimated	180 miles @\$.06	10.80
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C. Materials:

1. None.

Total Costs	<u>\$170.80</u>
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Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

WILDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge : White River N. W. R.

Procedure No.: 5

Species: Squirrel

Reliability Class: D

Title : Squirrel Inventory

Purpose

A major objective of this refuge is to manage resident big game and upland game species in order to provide quality recreational opportunities, including hunting. Past and present land and water practices are attractive to this species. Hunting is a management tool necessary for sustaining populations at healthy and productive numbers and is compatible with other primary refuge objectives. This inventory procedure will enable refuge personnel to be constantly aware of population trends. Hunting regulations can be adjusted to insure adequate breeding populations and to harvest excess numbers.

Procedure

An observer will be at a pre-determined point at daylight and will remain at this location for 30 minutes. Both grey and fox squirrels will be counted. At the end of the 30-minute period, the numbers of each species will be recorded in the field diary. The observer will then pace from the observation point to the furthest distance a squirrel could have been detected by species. This distance, too, will be recorded.

Fifteen minutes will be allowed to travel to the next pre-determined observation point and this procedure continued until squirrels on three plots have been counted.

Upon completion of this two-day inventory, the number of squirrels and acreages on which the surveys were conducted will be calculated for each timber type to determine the number of squirrels on each timber type. The number of squirrels on each timber type will be added to find the total refuge population.

1. Number of Personnel Required: Three refuge personnel will conduct this survey in two mornings.
2. Dates of Inventory: This inventory will take place during the last two weeks in April.
3. Times of Day: The inventory will begin at daylight and continue for two and one-half hours.
4. Weather Conditions: This inventory will be conducted on clear days with a maximum wind velocity of three miles per hour.
5. Survey Units: Each of the seven major timber types occurring on the refuge that are considered to be squirrel habitat will be a survey unit. Timber types, acreages, and number of plots per type are shown in Exhibit 1 in Appendix.
6. Observation Points: Observation points will be selected at random on each timber type. Permanent observation points will not be used because of periodical flooding during the inventory period. Only those plots falling on dry land will be used.

7. Method of Transportation: Pickup trucks, jeeps, and boats will be used to transport the observer to within 150 yards of the observation point. The remaining distance will be covered on foot.

8. Field Data Forms: The field diary will be used to record field notes.

9. Summary Data Forms: All field data will be transferred to Form WRR-6 (Exhibit 2) for incorporation into the annual Narrative Report.

10. Data Filing: All WRR-6 forms will be filed in "Wildlife" under the appropriate species.

Reliability

Reliability of the population data will be Class D. A Spring inventory will only indicate population trends and can be compared from year to year.

Manpower and Costs

A. Manpower:

	<u>Man-Hours</u>	<u>Annual Costs</u>
1. Observers	24	\$ 90.00
2. Summarization of Data	3	11.25

B. Equipment:

1. Vehicle	14.00
2. Boat and Motor	3.00

C. Materials:

The only special material involved will be form WRR-6 and the cost is insignificant.

Total Costs \$118.00

Prepared by: _____ **Date:** _____

Reviewed by: _____ **Date:** _____

Approved by: _____ **Date:** _____

<u>Timber Types</u>	<u>Acreage</u>	<u>Plots</u>
Overcup Oak-Bitter Pecan	57,682	4
Oak-Elm-Ash	16,418	3
Hackberry-Elm-Ash	13,570	3
Nuttalls Oak-Willow Oak-Sweetgum	3,721	2
White Oak-Red Oak-Hickory	1,451	2
Cypress	1,364	2
Willow Oak	1,216	2
Willow-Trash	1,112	0
Red Gum	660	0
Cottonwood	480	0
Sycamore-Pecan-American Elm	226	0
Loblolly Pine	15	0

WILDLIFE INVENTORY PLAN
OUTLINE
for
WILDLIFE INVENTORY PROCEDURE

Refuge : White River N. W. R.

Procedure No.: 6

Species: All Other Species

Reliability Class: D

Title : Miscellaneous Wildlife Inventory

Purpose

White River Refuge was established primarily for the preservation of migratory waterfowl, however, the refuge is also responsible for forms of wildlife and plants on the refuge. A continuing inventory designed to detect trends in animal populations on the refuge is an undeniable responsibility. This inventory procedure is mainly to fulfill this responsibility until additional personnel are employed and can initiate more comprehensive inventory procedures for separate species. Migratory game birds, predatory animals, water and wading birds, furbearers, upland game, and other birds will be censused using this procedure.

Procedure

1. Number of Personnel: All refuge personnel will assist in the inventory.
2. Survey Unit: The entire refuge will be considered one unit.
3. Method: All refuge personnel will have a field diary with him and will record any significant wildlife observed on the refuge or adjacent private property. The diaries will be turned in monthly and the pertinent information will be extracted and recorded on Form WRR-7.

4. Summary Data Forms: Field data recorded on WRR-7 will be used to complete NR-1a, NR-2 and NR-4.

5. Data Filing: File data form (WRR-7) in "Reports" under narrative report data.

Reliability

This procedure will yield Reliability Class D information.

Manpower and Costs

A. Manpower:

	<u>Man-Hours</u>	<u>Annual Costs</u>
1. Observers (Staff)	120 (\$3.31/hr)	\$397.20

B. Equipment:

Prorated share of vehicle cost	400.00
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C. Materials:

Only special material involved will be form WRR-7 and the cost is insignificant.

Total Costs \$797.20

Prepared by: _____ Date: _____
Reviewed by: _____ Date: _____
Approved by: _____ Date: _____

[illegible]